

CLAIMS

- 1 1. A device comprising:
2 a mobile embedded device having a cursor manipulator including,
3 the cursor manipulator including,
4 a sensing surface operative to sense contact by the human finger,
5 the contact corresponding to applied pressure,
6 a pressure sensor array disposed on the sensing surface, wherein a
7 measurement of the plurality of pressure sensors corresponds to an image,
8 and
9 an image detector, receiving images from the pressure sensor
10 array, generating cursor manipulation corresponding to changes between
11 the images.
- 1 2. The device, as defined in claim 1, wherein the cursor manipulation corresponds
2 to planar directional movement.
- 1 3. The device, as defined in claim 1, wherein the cursor manipulation
2 corresponds to data entry.
- 1 4. The device, as defined in claim 1, the image detector including:
2 a controller;
3 a multiplex driver, transceiving data from the controller;
4 an image array, receiving data from the multiplex driver;
5 sense amplifiers, connected to the image array, transceiving data from the
6 controller;
7 a port transceiving data with the controller;
8 current read access memory (RAM) connected to the sense amplifiers;
9 reference RAM, connected to the current RAM;
10 a predictor;
11 a cross-correlator receiving data from the current RAM, reference RAM, and the
12 predictor; and

13 an interpolator, receiving data from the cross-correlator, transmitting data to the
14 predictor and the controller.

1 5. The device, as defined in claim 1, wherein the mobile embedded device is
2 selected from a group comprising personal data assistants and cellular phones.

1 6. A system for providing cursor manipulation when using a human finger
2 comprising:
3 sensing surface operative to sense contact by the human finger, the contact
4 corresponding to applied pressure;
5 a pressure sensor array disposed on the sensing surface, wherein a measurement
6 of the plurality of pressure sensors corresponds to an image; and
7 an image detector, receiving images from the pressure sensor array, generating
8 cursor manipulation corresponding to changes between the images.

1 7. The system, as defined in claim 6, wherein the cursor manipulation corresponds
2 to planar directional movement.

1 8. The system, as defined in claim 6, wherein the cursor manipulation
2 corresponds to data input.

1 9. The system, as defined in claim 6, the image detector including:
2 a controller;
3 a multiplex driver, transceiving data from the controller;
4 an image array, receiving data from the multiplex driver;
5 sense amplifiers, connected to the image array, transceiving data from the
6 controller;
7 a serial port transceiving data with the controller;
8 current read access memory (RAM) connected to the sense amplifiers;
9 reference RAM, connected to the current RAM;
10 a predictor;

11 a cross-correlator receiving data from the current RAM, reference RAM, and the
12 predictor; and
13 an interpolator, receiving data from the cross-correlator, transmitting data to the
14 predictor and the controller.

1 10. A method for finger navigation comprising:
2 sampling a portion of an array of pressure sensors to generate a first sample;
3 re-sampling the portion of the array to generate a second sample; and
4 comparing the first and second samples to determine navigational movement.

1 11. A method, as defined in claim 10, wherein the portion is a subset of the array.

1 12. A method, as defined in claim 11, wherein the subset is a periodic selection
2 of pressure sensors.

1 13. A method, as defined in claim 11, wherein the subset is a region of pressure
2 sensors.

1 14. A method, as defined in claim 13, wherein the region has an area comparable
2 to a fingerprint.

1 15. A method, as defined in claim 13, wherein the subset further comprises a
2 second region of pressure sensors.